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(Information from Miss Nau, O.E.S.)

LIST OF PROJECTS OF INTEREST TO AGRICULTURAL ENGINEERS AT THE STATE AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

This list contains (1) projects in which agricultural engineers are leaders, (2) projects in which agricultural engineers are participating but in which branches of agricultural science are leaders, and (3) a few projects conducted wholly by branches of agricultural science, but which bear on matters of interest to agricultural engineers. The last are specifically indicated in most cases by the name of the branch of agricultural science concerned.

CLEARING LAND.

Land clearing investigations: (a) Brush plowing, (b) power requirements for stump removal, (c) studies on time of brushing and seeding cut-over land, (d) use of war salvage explosives in land clearing, (e) factors affecting the efficiency of explosives, and (f) number of cleared acres required in northern Wisconsin to support a farm. Wis.

Stump burning. Wis.

Land clearing. General study of methods and results. Oreg.

Killing hardwood stumps with poisons. Wis.

Methods of clearing logged-off hill land and tide land. (Astoria Substation) Oreg.

Investigations in land clearing methods and equipment.--New methods and implements used in clearing land, stump pullers, tractors, and various combinations of methods and equipment, such as dynamite plus the stump puller, dynamite plus the tractor, use of dynamite before and after pulling, use of livestock and of fire, large and small scale clearing under farm conditions. Minn.

Land clearing methods. (North Central Substation, Grand Rapids) Minn.

Method of clearing cut-over land. Mo.

Land clearing with goats. Oreg.

Study of methods and equipment for removing and ridding land of stumps. Calif.

Investigations in methods of stone removal. Minn.

Investigations in cost of land clearing.--To determine the cost of clearing, best methods of preparing newly cleared land for cultivation, and the first crops that can best be raised on the various types of soil. (Duluth) Minn.

Land clearing.--To determine the cost and best methods of clearing and preparing cut-over land for crop use. Mich.

Land clearing.--Use of explosives, method for blasting stumps, and cost of burning stumps. Ala.

CLEARING LAND - CONT'D.

Land clearing methods. Stump burning. Wash.

Investigations in developing newly cleared land. The kinds of plows best adapted to various soil types, hours of labor required for various operations, methods and cost of stone and root picking and comparison of efficiency of disk and plow for preparation of seed bed for first crop. (Duluth) Minn.

Investigations in plowing underbrush. Minn.

Economic limitations of stump removal for pasture. Minn.

Land clearing salvage. Stone. Minn.

Utilization of stump wood for fuel. Minn.

DRAINAGE.

Drainage in Georgia. Ga. Agr. Col.

Farm drainage investigations.--Economics of tile drainage. Va.

Studies in farm drainage. (Delta Substation) Miss.

Run-off water losses in relation to crop production. Texas. (Agronomy)

Drainage studies in the Everglades. Fla.

Drainage systems. A study of different practices followed over the State and their effectiveness. Mont.

Pumping for drainage. Mont.

Relative efficiency of different depths and spacings of drainage lines. Minn.

Drainage and water control investigations of peat lands. Minn.

Effect of surface and tile drainage on crop production. (N. W. Station) Minn.

Experimental concrete drains.--To study the action of concrete tile in acid soil of Coastal Plain. N. C.

Effect of drainage on forest growth. Wis.

Investigations of causes of failures of agricultural drain tile, the means of obviating such failures and mapping areas where extra precautions are necessary. Minn.

Durability of concrete drain tile. Wis.

Study of various kinds of tile, and size, depth, and distance between drains.

DRAINAGE - CONT'D.

Drainage of "grease wood lands" to remove alkali and restore the structure of such lands. Oreg. (Soils)

Comparative value of vitrified clay and concrete pipe for sewers and agricultural drains. Miss.

Study of water table and outflow on "white land" and effect of clover, lime, and manure on percolation. Oreg. (Soils)

Drainage and reclamation of alkali land. Idaho.

Drainage by pumping from sump or well. (Delhi) Calif.

Drainage investigations: (a) Settling of peat after drainage, (b) the development of a marsh plow for breaking new land, and (c) studies in subsoil as a factor in drainage design. Wis.

Methods and costs of drainage installation, and correlation of land and crop values with cost of drainage. Minn.

Drainage and reclamation of tide lands, especially investigations as to drainage systems. (Astoria Substation) Oreg. (Soils)

Drainage and improvement of wet lands. Drainage of tide lands. Oreg. (Soils)

Drainage.--To improve drainage practice and agricultural conditions. Mich.

Tile drainage. La.

Studies in various phases of drainage in California. Calif.

Movement of water in soils. Minn. (Soils)

BUILDINGS AND EQUIPMENT.

Equipment for swine production. Kans.

Farm buildings.--To study the types of frame and planning of farm buildings from an economic and sanitary standpoint. Mich.

Pisé de terre construction. Kans.

Investigations of farm buildings. Plans of farm buildings prepared by the farm building section. Minn.

Dairy buildings for Kansas. Kans.

Farm building plans. Ark.

BUILDINGS AND EQUIPMENT - CONT'D.

Farm structures. N. Dak.

Survey of farmhouse design in the United States. Ga. Agr. Col.

Rural home design for the warm interior valleys of California. (Davis Substation) Calif.

Control of ventilation and heat in the curing of sweet potatoes. Ga. Agr. Col.

The needs of farm homes. Mich.

Structures and building equipment for fruit and vegetable farms. (Davis Substation) Calif.

Storage and handling of crops. Ill.

Investigation of cheap shelters. Farm straw sheds. N. Dak.

Fruit storage. Wash. (Horticulture)

Potato storage. Mich.

Storage of grape varieties.--To learn the keeping qualities of grapes in cold storage. Ill. (Horticulture)

Apple storage investigations. Oreg. (Horticulture)

Filbert storage investigations. Oreg. (Horticulture)

Apple storage investigations. Ind.

Pear storage investigations. Oreg. (Horticulture)

Apple storage.--Use of ice. Mass.

Cold storage for Iowa.--Apples. Iowa. (Horticulture)

Farm building ventilation. Minn.

Comparison of efficiency of King and Rutherford systems of ventilation. Wis.

Systems of ventilation for drying soft corn. Ill.

Heating and ventilating of homes, including installation and operating data. Minn.

Poultry house ventilation. Ind.

BUILDINGS AND EQUIPMENT - CONT'D.

Ventilation of poultry houses. S. Dak.

Ventilation of poultry houses. Mich.

A study of dairy barn ventilation. N. Y. Cornell.

Humidifying air in buildings. Colo.

Masonry arch barn construction. Iowa.

The equipment for storing and handling of manure. (Davis Substation) Calif.

Equipment for livestock feeding and management. Iowa.

Economic arrangement and rearrangement of dairy farms. N. Y. Cornell.

Structures and building equipment for California dairy barns. (Davis Substation) Calif.

Dairy barn floors. Iowa.

Effect of temperature and humidity on the milk production of the dairy cow. N. J. (Dairy and Animal Husbandry)

A study of the effect of climatic conditions upon the production of milk.--To determine the effect of changes in temperature, humidity, and other climatic conditions upon the production of milk. (Coastal Plain Substation) N. C. (Dairy and Animal Husbandry)

Effect of air temperature on percentage of butterfat in milk. Ariz. (Dairy and Animal Husbandry)

Sweet potato curing houses. Design and ventilation. Ark.

Dehydration of fruits, walnuts, and vegetables. Oreg. (Horticulture)

Cellular concrete construction for farm structures. Iowa.

Experimental silos. (Judith Basin and North Montana Substations) Mont.

Capacities of silos. Iowa.

Treatment of silo walls. Iowa.

Trench silo investigation. N. Dak.

Rammed earth construction. Calif.

Investigation of rammed earth construction. N. Dak.

L-shaped concrete block.

BUILDINGS AND EQUIPMENT - CONT'D.

Use of explosives in constructing the trench silo. N. Dak.

Weight and pressure of sunflower silage. Mont.

Farmer's grain elevator investigations. Ill. (Economics)

Hog houses and equipment. Ill.

Hog houses for California farms. Calif.

Creamery buildings. Iowa.

Housing purebred poultry. Ky.

Poultry housing. Nebr.

Poultry houses and equipment. Ill.

Improvement of existing poultry houses to provide optimum environment during winter confinement. N. J. (Poultry)

To devise and improve poultry equipment and methods used in handling poultry. Md. (Poultry)

Study of insulated and noninsulated poultry houses. Wyo. (Poultry)

Poultry house ventilation and construction. Nebr.

The effect of ventilation and confinement on winter egg production and disease prevention. Ky. (Poultry)

Air requirements of poultry.--A study of ventilation of different types of poultry houses. Iowa.

Factors governing temperature and humidity of poultry buildings, with special reference to their effect on the health of males and the egg production of females. N. Y. Cornell.

A study of the methods of poultry house lighting. N. Y. Cornell.

Effect of artificial illumination on breeders. N. Y. Cornell.

Effect of artificial illumination on growth and maturity of pullets. N. Y. Cornell.

Artificial illumination for pullets. Del. (Poultry)

Artificial light in egg production, using lights morning and night in the laying house. Mont. (Poultry)

BUILDINGS AND EQUIPMENT - CONT'D.

Influence of artificial illumination in the control of egg production, especially with reference to flock segregation according to laying qualities and physical condition. N. Y. Cornell.

Influence of artificial lighting on production, health, and reproduction of poultry. S. Dak. (Poultry)

Effect of artificial illumination on early hatched and early maturing S. C. W. Leghorn pullets. Pa. (Poultry)

The use of artificial light as a means of increasing egg production. Iowa.

Electric lighting of poultry houses.--To find the influence of electric lights in a poultry house between 8 and 9 p. m. on two-year-old Leghorn hens. Ind. (Poultry)

Artificial lights for poultry houses. (North Central Station) Minn. (Poultry)

Economical and suitable design for poultry farm building equipment. Calif.

Fire fighting. Ala.

Spontaneous combustion. Mich.

Causes of farm fires.--Fire prevention and protection. Pa.

Studies to determine value of concrete feeding floors and hog wallows. Tex.

MACHINERY.

Farm machinery. Ala.

Sweet clover harvester. Kans.

Farm machinery and equipment. N. Dak.

Farm machinery survey. Nebr.

Farm machinery.--To study the various farm machines with a view to increasing their efficiency and determining their adaptability. Mich.

A survey of farm machinery conditions in Arkansas including types of machinery used. Ark.

Tillage machinery on dry land farms. Mont.

Power machinery.--To study the operation and cost, efficiency, and adaptability of stationary engines, tractors, and accessories. Mich.

Length of life of farm machinery. Iowa.

MACHINERY - CONT'D.

A study of economical machinery equipment for typical farms in the several farming regions of Virginia. Va.

Draft test of farm machinery. Iowa.

Draft of farm implements. Farm power. Mont.

Investigations to determine the draft of various farm implements and the cost of different operations with them, to determine the draft of various tillage and other farm implements, the effect of different soil types on draft, and the effect of the different treatments of soils on the draft of various implements; also to determine the cost of different operations, the draft of a single disk per foot of width, and the effect of single and of double disking before plowing. Mo.

Development of a hydraulic dynamometer for testing draft of tillage implements. Wash.

Plow draft investigations. Nebr.

Plow draft studies.--To study draft required for plowing the different soil types and the effect of crop rotation and soil treatment on the draft. Ill.

The draft of wagons. Mo.

Plowshare wearing tests. Calif.

Factors influencing the draft of tillage machinery. Ark.

Soil dynamics as affecting the design of tillage machinery. Ala.

Study of methods of measuring the degree of pulverization of soil. Calif.

Soil tilth. Nebr.

Soil dynamics. Calif.

Study of grain drills on seeders to determine the effect of treated grain on the rate of seeding. Calif.

Furrow drill v. ordinary drill in northern Montana. (Northern Montana Substation) Mont.

Study of equipment for handling grain in bulk. Calif.

Threshing studies.--To determine factors affecting the efficiency of threshing small grains. Ill.

Sweet clover harvester attachment. S. Dak.

Soy bean harvesting and threshing. Ill.

Small combine harvester. S. Dak.

MACHINERY - CONT'D.

Threshing machine studies.--(a) Efficiency of grain separators, (b) relative merits of large and small threshing rigs, (c) efficiency of custom and cooperatively owned outfits, (d) to investigate threshing rigs. Ill.

Static electricity as a probable cause of smut explosions and threshing machine fires. Wash.

Investigations of farm tractors. Minn.

Tractor survey of Georgia. Ga. Agr. Col.

Economic study of farm tractors. Mont.

The status of the farm tractor.--To study the economic results of the farm tractor as operated under average Indiana conditions. Ind.

A study to determine the fundamental factors influencing traction of wheel tractors. Ala.

Tractor tests. Nebr.

Study of dust and air separation and air cleaners for internal-combustion engines. Calif.

Almond harvesting machinery. Calif.

Study of machinery for applying copper carbonate dust to seed wheat. Calif.

Testing of the value of various spreaders for sprays. Idaho.

A test of spreaders of spray materials. Ill. (Horticulture)

Spray equipment investigation. Va.

Investigation of stickers, spreaders, and diluents for spraying and dusting, particularly the latter.--To find satisfactory dust materials that will take the place of liquid mixtures; to find a spreader for commercial lime-sulfur. N. J. (Horticulture)

Study of devices for applying heat for plant and animal pest control. Calif.

The determination of the slippage of various types of wheel equipment. Ind.

Economic study of methods of harvesting soy beans for seed. Va.

Power requirements for belt machinery.--The design and accessories of silo fillers, threshing machines, and other belt-driven machinery as affecting power requirements. Speed as a factor of efficiency. Wis.

MACHINERY - CONT'D.

Silo filling studies. A study of the factors affecting economy in filling silos, cost, and amount of labor required. Ill.

A study of tandem horse hitches.--To determine the practicability of various sizes and types of tandem hitches and the best dimensions for the various parts of which they are constructed. Ill.

Implements used in the cultivation of corn.--To study the relative efficiency of different kinds of implements used in cultivating corn. Ill.

Investigation of dropping mechanisms for cotton. Tex.

A study of limestone and fertilizer spreaders. Iowa.

Tests of fertilizer distributing machinery. N. J.

Marl handling.--To make marl available for agricultural use. Mich.

Design and test of burner for destroying weeds, such as foxtail grass in alfalfa, and for other uses. (Davis Substation) Calif.

Study of orchard heaters. Calif.

Seed cleaning investigations.--To determine the best combination of screens and sieves, wind blast and rate of feeding for cleaning red clover, alsike, sweet clover, alfalfa, and timothy seed. Ill.

Experiment on the operation of dairy machinery and equipment. Calif.

Machine vs. hand milking. N. Y. State. (Dairy)

The study of milking machines. Iowa. (Dairy)

Cost of grinding dairy feeds. Ind.

Milking machines.--To study the influence of the various ways milking machines are handled on the bacterial contamination of milk and to work out a procedure of handling adapted to the average farm. Ill. (Dairy)

A study of the antifreezing properties of solutions of honey and other sugars in the cooling systems of automobiles and other internal-combustion engines. N. Y. Cornell.

Tractor studies. N. Y. Cornell.

Bearing wear in engines and machinery as affected by the character and condition of the lubricant. Calif.

MACHINERY - CONT'D.

Hand operated apple condition testing machine. Wash.

Test of lubricating oils. Colo.

Developing efficiency of sprout mower and when to use it. Mo.

Reclamation and utilization of used crankcase oil from farm engines. Calif.

A study of some of the properties of several commercial brands of lubrication oils for internal-combustion engines. N. Y. Cornell.

Relation of dust to motor operation. Colo. Idaho.

Soil traction: A study of the traction obtained by the interaction of the members of field tractors and the soil. Calif.

Air cleaning. Ala.

A study of the dynamics of tractors and field machines. Calif.

Cost of grinding limestone for agricultural use. Tenn.

POWER

Rural electrical survey. Kans.

Farm power studies. Ill.

Electricity in irrigation pumping. Kans.

Study of the horse as a motor. Iowa.

A field study to determine the optimum and economic uses of electricity in agriculture. Va.

Cost of horse power. Oreg.

Survey of present available electric power, covering its application to agriculture, distribution, etc. Va.

The use of electricity on the farm. Mich.

Survey to determine power requirements for each distinct type of agriculture in the state. Va.

Use of electricity for hoisting hay, elevating grain and shavings, grinding grain. Oreg.

POWER - CONT'D.

Application of electricity to agriculture. Idaho, Iowa, Minn. Kans., Ill., Calif., Oreg., N. H., Va., Ala., Ariz., Pa., N. Y., Ohio, Ind., Nebr., Mo., Ark., Okla., S. Dak., Wash., Wis.

Utilization of electricity in agriculture. Minn.

Study of electric power used on farms. Ill.

The availability of electric power on the farm. Wis.

Electricity for use in generating superheated steam for sterilization of milk cans. Va.

Economic study of farm water power plants. Va.

Study of electric water heating. Calif.

Electricity in dairying. Kans.

Electrical power from the wind. Iowa.

Electricity in poultry production. Kans.

Hydroelectric plants. Minn.

Electricity in processing and handling grain and forage. Kans.

Design of a windmill of the hollow cup, horizontal type for farm lighting purposes.--To design a horizontal windmill for use in developing electricity. Ind.

Study of power load in the production of various field crops. Va.

Rural electrical laboratory. Kans.

Wind power electric lighting plants. Minn.

Cost records on unit electric plants both wind and gas engine driven. Mich.

The application of electricity in the farm home. Iowa.

Heating water by solar heat. Ala.

Heating water by solar heat. Tex.

A study of the power and labor factors involved in general farming in Pennsylvania and how they may be advantageously manipulated by engineering procedure. Pa.

WATER SUPPLY, SEWAGE DISPOSAL, AND SANITATION.

Rural sanitation. Study of septic tanks and disposal systems. (Davis Substation) Calif.

Farm sewage disposal. Minn.

Sewage disposal. Mont.

Study of the flow of sewage in farm septic tanks. Ark.

Investigation of the biology of sewage disposal.--To find out how sewage may be disposed of with a reduced amount of water and end product containing the waste materials in a commercial form. N. J.

Investigation of farm septic tanks.--(a) Relation of length, width, and depth of tank to efficient operation, (b) most efficient size for a given quantity of sewage, (c) relative efficiency of the single-chamber tank and those of more than one chamber, (d) flow of farm sewage. Ill.

Farm sewage disposal. Kans.

An investigation of sanitary conditions on farms and experiments to determine the best types of sanitary equipment.--To determine the actual sanitary conditions as they exist on typical farms, and the economy and efficiency of different kinds of sanitary equipment. Mo.

Hydraulic ram investigation. Va.

Study of sewage disposal. Mich.

Farm water supply. Masonry water tank. Iowa.

Development of farm water systems. Ark.

Efficiency tests of electric-driven water systems including operating costs. Ill.

Design and installation of farm water systems. Idaho.

Treatment of alkali and other waters for domestic use. Colo.

Water for household purposes. Nebr. (Home Economics)

Water supply and sewage disposal. W. Va.

IRRIGATION.

Ground water development. Utah.

Principles of soil moisture in relation to irrigation (Davis Substation) Calif.

Effect of overhead irrigation on vegetables. R. I. (Horticulture)

Irrigation investigations. Mont.

IRRIGATION - CONT'D.

Use of measuring devices for irrigation water. Mont.

Experiments on distribution of water. Oreg.

Irrigation experiments. Investigations to determine best length and width of borders for border irrigation (Hermiston Substation) Oreg.

Use of irrigation water. Wash.

Border irrigation. (Irrigation Substation) Wash.

Orchard irrigation. Mont.

Duty of water. Mont.

Evaporation and duty of water. Ariz.

Factors affecting the movement of soil moisture. Mont. (Soils)

Factors affecting distribution of water in soils. Calif.

A study of water relations, such as movement of soil moisture due to capillarity and gravity, percolation and distribution, moisture equilibrium, moisture content of soils, and wilting point. Wash. (Agronomy)

The effect of the size of the container and such external factors as temperature and relative humidity upon the rise and rate of rise of capillary water through soil columns. (Davis Substation) Calif.

Systematic soil moisture studies under humid, dry farming, and irrigated conditions, to determine value of (a) different tillage treatments, (b) fertilizers, and (c) manure in increasing the efficiency of moisture made available. Oreg. (Agronomy)

To determine the amount and rate of use of soil moisture by the small grain crops and corn, the depth of penetration and use, and the amount of water stored on fallow. (Dickinson Substation) N. Dak. (Agronomy)

Water requirement studies. Oreg. (Agronomy)

Effect of organic matter on the moisture equivalent. Calif.

A study of the moisture relations of California soils, with special reference to means of measuring and expressing critical contents of soil moisture. Calif.

Relationship of stream discharge to precipitation, with special reference to forecasting the supply of water for irrigation from seasonal surveys of snow cover on mountain water sheds. Utah.

IRRIGATION - CONT'D.

Duty of water studies in the Las Vegas Valley of southern Nevada. Studies of the economical use upon special crops and on suitable soils of small heads of water from artesian wells or pumped from underground supplies, and on the cost of pumping, on desirable cement construction, and on methods and cost of well drilling. Nev.

Duty of water. Amount of irrigation water for best results with wheat, oats, barley, peas, alfalfa, sunflowers, and other less important crops. (Burns Substation) Oreg. (Agronomy)

Duty of water studies on cabbage, potatoes, corn, alfalfa, and grapes, chili and canteloupes. N. Mex.

Irrigation experiments. Duty of water for major crops with varying depths of application and applications at different intervals. (Hermiston Substation) Oreg. (Agronomy)

Duty of water investigations. Studies as to duty of water for different soils and crops on the main irrigated sections of Oregon. Oreg. (Agronomy)

Pumping for irrigation, canal improvement, and ground water investigations. Utah.

Use of irrigation water on the University Farm, including observations on the fluctuation of the underground water table. (Davis Substation) Calif.

Seepage in the Gallatin Valley. Study of underground water levels. Mont.

Cost of pumping irrigation water. Laboratory test. Mont.

An investigation of irrigation pumping machinery. Ariz.

Pumping from wells. Mont.

Ground water investigations. Principles of ground water recharge, movement and escape or use, especially escape through transpiration. Ariz.

Ground water studies in the middle Upper Rio Grande Valley, New Mexico. Preliminary investigation for the purpose of determining the source of seepage water, location of drains, size of drains, and assistance towards the organization of drainage districts. N. Mex.

Ground water studies in the Mesilla Valley, New Mexico.--To determine the cause of the rise of the ground water, rate of rise, and approximate damage done. N. Mex.

Ground water development. An investigation of the valleys of the State and to map the same to show where artesian water is available for irrigation and for culinary purposes. The pressure of the water, the flow of the wells, and the nature of the supply reservoir are studied for all artesian well districts of the State. Utah.

IRRIGATION - CONT'D.

Studies on an inverted sand filter for desilting turbid waters for irrigation purposes. Ariz.

Feasibility surveys. Surveys of proposed irrigation and proposed drainage projects to determine their feasibility agriculturally. Oreg.

Venturi flume: Its perfection and calibration for the measurement of water flowing in open channels. Colo.

Measurement of irrigation water. (Davis Substation) Calif.

Evaporation from water surfaces and moist soils. Colo.

Orchard irrigation studies. (Davis Substation) Calif.

Orchard and vineyard irrigation studies. (Delhi Substation) Calif.

A study of the irrigation requirements of prune, apricot, peach, and walnut trees. (Davis Substation) Calif.

Irrigation of an old almond orchard for the purpose of rejuvenating the trees. (Davis Substation) Calif.

Irrigation of bearing walnut groves. (Riverside Substation) Calif.

Duty of water on grapes.--To determine the best amounts of water to use and the best time of application. N. Mex.

Duty and effect of duty of water on alfalfa.--(a) to investigate light vs. heavy irrigation, short vs. long plats, (b) to study the effect of the duty of water on alfalfa. N. Mex.

Reclamation after drainage, application of irrigation water, and duty of water as factors underlying the economic use of irrigation water. Idaho.

Conditions governing the application of irrigation water. Idaho.

Reclamation of alkali lands by flooding and drainage. Calif.

Plant and irrigation relationships. Idaho. (Agronomy)

Leaching of drained alkali lands in Imperial Valley.--To work out the best procedure for removing the alkali. Calif.

Overhead irrigation of strawberries.--To study costs and profits in the use of an overhead irrigation system in strawberry growing. Ill. (Horticulture)

The irrigation of market garden crops with regard to profitableness. Tenn. (Horticulture)

IRRIGATION - CONT'D.

Irrigation investigations with field crops. (Davis Substation) Calif.

Measurement of water in irrigation canals having little fall. Ariz.

Duty of water for field crops in Sacramento Valley. (Sacramento Valley) Calif.

Cement pipe for irrigation. Ariz.

Water requirements and the economical use of water for cotton. N. Mex.

Rainfall supplemented by underground waters in the production of crops of low water requirements. N. Mex.

Irrigation of alfalfa (Delhi) Calif.

The irrigation of Pima cotton in the Imperial Valley. (Imperial Valley) Calif.

Cost of irrigation of rice in Arkansas. Ark.

Irrigation of rice by pumping. Ark.

Community irrigation movements in California. Calif.

Irrigation demonstration farm unit.--To show the profit of operating a small intensive livestock farm under irrigation. (Williston Substation) N. Dak.

Irrigation practice at Greenville with sugar beets, potatoes, oats, and alfalfa. Utah.

Water supplies and irrigation in Cochise County. Ariz.

Irrigating waters and soils. A study of the irrigating waters and soils of the State. Ariz.

Overhead irrigation of vegetables. N. J.

Comparative irrigation trials.--To ascertain the effects of one normal as compared with two normal irrigations. (Williston Substation) N. Dak.

MATERIALS

Properties and uses of second growth redwood. Calif. (Forestry)

Relative durability of various pines, and of redwood cut from old and second growth. Calif. (Forestry)

MATERIALS.

Relative durability of Idaho woods. Idaho. (Forestry)

Determination of moisture content of different woods under various conditions and their adaptability for special purposes. Pa. (Forestry)

Farm fence posts. Durability and suitability of available kinds and types of posts. (Davis Substation) Calif.

The rots of cedar posts and poles. Minn. (Forestry)

Relative durability of creosoted fence posts treated by (a) brushing (b) dipping, and (c) the open-tank method of creosoting, and set in an experimental line in one of the fences bounding a university wood lot. N. Y. Cornell.

Effect of structure, time of cutting, and method of seasoning of white cedar on the penetration of preservatives. Minn. (Forestry)

Periods required to secure penetration of creosote oil in fence posts of common species of wood when treated by the hot-bath and cold-bath methods. N. Y. Cornell.

Fence post treatment with various chemicals and charring. Mont.

Preservative treatment of fence posts. Minn. Iowa.

A study of the methods of prolonging the service of wood fence posts. Mo.

Investigation of the relative durability of fence post timbers. Ohio.

Durability of posts and methods of fencing in vineyards. Ark.

Comparison of fence posts. Minn.

Effect of moisture on concrete. Ariz.

Life of roofing materials under Georgia conditions. Ga. Agr. Col.

Preservation of farm timbers. Ala.

Roofing materials. Ala.

Effect of alkali in Portland cement. Mont.

Screen wire durability tests. Wyo.

Effect of beet pulp on Portland cement concrete and mortar. Colo.

Road materials of Colorado. Colo.

MATERIALS - CONT'D.

Subgrade soils of Colorado. Colo.

Shingle nail experiment. Lasting qualities of Western Red Cedar shingles fastened with different kinds of nails. Pa. (Forestry)

Shingle experiment. Pa. (Forestry)

Fence post treatment. Mont.

Roofing materials. Iowa.

SOIL EROSION.

Experiments (a) to devise practical methods for prevention of soil washing by means of terraces, (b) to establish the relation between ground slope and the frequency of terraces, (c) to find the practical limits for the fall of a terrace. Ind.

Factors relating to the terracing of farm lands. Ark.

Experiment in soil erosion.--To determine amount of run-off and erosion on plats of the same length under different crops, and of the different lengths under the same crop. N. C.

Studies of water absorption, run-off, percolation, composition, capillary water movement and soil erosion under field conditions. Mo.

Mechanical methods for checking soil washing. Ill.

Soil erosion in Nebraska. Nebr.

Value of terracing to conserve soil moisture. Study of run off and erosion. Te-

MISCELLANEOUS.

Lighting with portable lamps. Nebr. (Home Economics)

Refrigeration and meat curing. Ala.

Dish washing. Ala.

Farm shop survey. Kans.

Straw as a fuel. Kans.

Factors affecting efficiency of operation in country milk plants. N. Y. Cornell. (Economics)

Methods and costs of hauling milk from farms to milk plants. N. Y. Cornell. (Economics)

Effect of various quantities of brine and of various brine temperatures on time of freezing and on the quality of ice cream. Mass.